

CLAIMS

1. A computer program product comprising computer-executable instructions for causing a computer to:

5 obtain performance data related to performance of a broadband network; and provide a hierarchical display of network performance, the hierarchical display including a first level with first data indicative of network operation and a second level with second data indicative of a plurality of issues comprising the first level of network performance;

10 wherein the second level includes multiple issues that contain a third level with third data indicative of network issues comprising at least some of the secondary level issues.

15 2. The computer program product of claim 1 wherein the first data are indicative of overall performance of one of the network, and a selected portion of the network.

20 3. The computer program product of claim 2 wherein the first data are indicative of overall performance of the network and the issues at the second level include at least one of connectivity and traffic.

4. The computer program product of claim 1 further comprising instructions

for causing the computer to provide more detail of issues comprising a selected level.

5. The computer program product of claim 4 wherein the more detail includes at least one of locations of network elements associated with the selected level,
5 and metrics corresponding to the network elements and associated with at least one issue comprising the selected level.

6. The computer program product of claim 5 further comprising instructions for causing the computer to provide more detail regarding a selected portion of the more
10 detail provided of issues comprising a selected level.

7. The computer program product of claim 5 further comprising instructions for causing the computer to sort the more detail according to at least one selected criterion.

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8. The computer program product of claim 7 further comprising instructions for causing the computer to analyze the more detail and to do at least one of:
provide at least one of an indication of a likely network problem, and a suggested action for addressing the likely network problem; and
20 implement corrective action to attempt to address the likely network problem.

9. The computer program product of claim 1 wherein the collected data are

metrics of network performance derived from raw data indicative of network activity.

10. The computer program product of claim 9 further comprising instructions
for causing the computer to derive the metrics from the raw data.

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11. The computer program product of claim 10 wherein the instructions for
causing the computer to derive the metrics include instructions for causing the computer
to:

obtain first metrics of performance of at least a portion of the broadband network;
10 and

combine a plurality of first metrics into a second metric of network performance
indicative of a higher-level of network performance than indicated by the first metrics.

12. The computer program product of claim 11 wherein the instructions for
15 causing the computer to combine first metrics weight different metrics differently
dependent upon perceived relevance of an issue associated with the metric to network
performance.

13. The computer program product of claim 10 wherein the instructions for
20 causing the computer to derive the metrics include instructions for causing the computer
to perform comparisons of first metrics derived from the raw data with thresholds and to
provide second metrics based upon the comparisons.

14. The computer program product of claim 13 wherein the second metrics provide indicia of grades of degraded performance of portions of the network as a function of time.

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15. The computer program product of claim 1 wherein the hierarchical display is independent of an amount of network elements contributing to the indicia of network performance.

10 16. The computer program product of claim 15 wherein the second data are indicative of network issues perceived to affect network performance more than network issues absent from the display.

15 17. The computer program product of claim 1 wherein the displayed data associated with levels provide indicia of absolute performance of portions of the network associated with the respective levels.

18. The computer program product of claim 1 wherein the displayed data associated with a level provide indicia of relative performance of portions of the network
20 associated with the respective levels.

19. The computer program product of claim 18 wherein the displayed data

associated with levels provide indicia of absolute performance of portions of the network associated with the respective levels.

20. The computer program product of claim 19 further comprising instructions
5 for providing a display of the data associated with levels over time.

21. The computer program product of claim 19 further comprising instructions
for providing a display of the data associated with levels over time.

10 22. The computer program product of claim 1 wherein the first and second
data provide indicia of grades of degradation of performance of at least portions of the
network as a function of time.

15 23. The computer program product of claim 22 wherein the network is a
DOCSIS network including cable modems and cable modem termination systems, and
the first and second data indicate numbers of cable-modem hours at the grades of
degradation.

24. A computer program product comprising computer-executable instructions
20 for causing a computer to:
obtain indicia of cumulative amounts of time that network elements of at least a
desired portion of a broadband network were considered at corresponding qualities of

network performance during a designated time frame; and

display the cumulative amounts in a hierarchy of network issues, the hierarchy including a summary category including summary values indicating total cumulative amounts of time that the network elements in the at least a desired portion of the network

5 were considered at corresponding qualities of performance, the hierarchy further comprising a plurality of sub-categories contributing to the summary category, and the sub-categories each further comprising at least one sub-sub-category contributing to the sub-categories.

10 25. The computer program product of claim 24 wherein the summary values indicate total cumulative amounts of time that all the network elements in the at least a desired portion of the network were considered at corresponding qualities of performance.

15 26. The computer program product of claim 24 further comprising instructions for causing the computer to indicate that categories contributing to a higher-level category are one of direct contributors and indirect contributors to the higher-level category.

20 27. The computer program product of claim 24 further comprising instructions for causing the computer to display additional information regarding a selected category of cumulative amounts.

28. The computer program product of claim 27 further comprising instructions for causing the computer to display further additional information regarding selected additional information.

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29. The computer program product of claim 24 further comprising instructions for causing the computer to determine network areas that are most-negatively contributing to network performance.

10 30. The computer program product of claim 29 further comprising instructions for causing the computer to recommend action, regarding at least one of the network areas that are most-negatively contributing to network performance, for improving network performance.

15 31. The computer program product of claim 29 further comprising instructions for causing the computer to implement action, regarding at least one of the network areas that are most-negatively contributing to network performance, for improving network performance.

20 32. The computer program product of claim 24 wherein the instructions for causing the computer to obtain indicia of cumulative amounts of time that network elements cause the computer to access a storage area containing the indicia.